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***Baltimore Nonattainment Area
PM_{2.5}
Maintenance Plan***

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Table of Contents

1. Introduction	1
1.1 National Ambient Air Quality Standard (NAAQS) for Fine Particulate Matter	1
2. Background	2
2.1 Health Effects from Elevated Concentrations of PM _{2.5}	2
2.2 Geographical Description of the Baltimore, MD PM _{2.5} Nonattainment Area	3
3. U.S. EPA Redesignation and Maintenance Plan Requirements	5
3.1 Attainment of the Standard	5
3.2 Implementation Plan Approval	6
3.3 Permanent and Enforceable Improvement	6
3.4 Maintenance Plan	6
3.5 Commitment to Revise Plan	8
3.6 Public Participation	8
3.7 Legal Authority to Implement and Enforce	8
4. Maintenance Plan Development	9
4.1 Attainment Inventory	9
4.1.1 Summary	10
4.2 Projection Inventory	10
4.2.1 Summary	11
4.3 Demonstration of Maintenance	11
4.3.1 Projected Emissions below Attainment Year Emissions	12
4.3.2 Control Measures for Maintenance of Good Air Quality	12
4.3.2.1 Point Sector Controls	12
4.3.2.2 Nonroad Diesel Emission Reduction Programs	14
4.3.2.3 On-Road Emission Reduction Programs	15
4.4 Commitment to Operate Air Quality Monitoring Network	16
4.5 Legal Authority – Verify Continued Attainment	17
4.6 Transportation Conformity and Mobile Source Emissions Budgets	17
4.6.1 Budget Level for On-Road Mobile Source Emissions	20
4.7 Contingency Measures	22
4.7.1 Exceedance of the Attainment Year Emissions Inventory	23
4.7.2 Near Term Contingency Measures for Air Quality Exceedances	23
4.7.3 Long Term Contingency Measures	23
4.7.4 Contingency Measure Implementation Schedule	24
Appendices	25

List of Figures

Figure 2-1: Baltimore, MD 1997 PM _{2.5} NAAQS Nonattainment Area (purple on map)	4
Figure 4-1: Large EGUs in the Baltimore, MD Area	14
Figure 4-2: Baltimore, MD PM _{2.5} Monitoring Sites	16
Figure 4-3: Baltimore, MD Annual PM _{2.5} Trend	20

List of Tables

Table 2-1: Baltimore, MD Nonattainment Area with FIPS Codes	3
Table 4-1: 2007 Baltimore, MD Attainment Year Inventory	10
Table 4-2: Growth Assumptions Used in Emission Inventory Projections	11
Table 4-3: Baltimore, MD NO _x , SO ₂ , & Primary PM _{2.5} Emissions, 2007 to 2025	12
Table 4-4: Comparison of SO ₂ Emissions from On-Road Sources to the Total SO ₂ Inventory..	19
Table 4-5: Baltimore, MD Maintenance Plan On-Road Mobile Source Emissions Budgets	21
Table 4-6: Baltimore, MD NO _x , SO ₂ , & Primary PM _{2.5} Emissions, 2007 to 2025 with Mobile Budgets	21
Table 4-7: Contingency Control Measures	23

1. Introduction

The State of Maryland is submitting this maintenance plan for the Baltimore, MD 1997 fine particulate (PM_{2.5}) nonattainment area to the United States Environmental Protection Agency (USEPA) in support of the Baltimore, MD redesignation request for that standard. This document demonstrates that PM_{2.5} air quality in the Baltimore, MD area will remain compliant with the 1997 PM_{2.5} NAAQS, as measured by a monitoring network that meets all federal requirements. This plan includes mobile vehicle emissions budgets for the interim year of 2017 and the out year of 2025. It also contains contingency measures that will be implemented in the unlikely event that the area experiences an exceedance of the 1997 PM_{2.5} NAAQS.

1.1 National Ambient Air Quality Standard (NAAQS) for Fine Particulate Matter

When USEPA establishes a NAAQS, this standard applies to the concentration of a pollutant in ambient outdoor air. Ambient air is considered to be the air that someone in the general public would breathe. If the air quality in a geographic area meets or is cleaner than the national standard, it is designated an attainment area; areas that do not meet the national standard or contribute to another area that violates the air quality standard are designated as nonattainment areas.

Fine particulate matter, or PM_{2.5}, is a mixture of microscopic solids and liquid droplets suspended in air. PM_{2.5} describes particulate matter that is 2.5 micrometers in diameter and smaller, 1/30th the diameter of a human hair. Fine particles are generally emitted from activities such as industrial and residential combustion and from vehicle exhaust. Fine particles are also formed in the atmosphere when gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds are chemically transformed into particles.

USEPA established the fine particle standards in July of 1997 after evaluating health studies and conducting an extensive peer review process. The 1997 annual standard was established at a level of 15 micrograms per cubic meter, based on the 3-year average of annual mean PM_{2.5} concentrations.

2. Background

In 1997, USEPA established two new PM_{2.5} standards: an annual standard of 15.0 µg/m³ and a 24-hour standard of 65 µg/m³. USEPA designated the Baltimore, MD area as nonattainment for the 1997 PM_{2.5} NAAQS with an effective date of April 5, 2005 (Federal Register, Vol. 70, No. 3, 1/05/2005).

Since this designation was made, PM_{2.5} air quality in the Baltimore, MD area has improved such that the air quality is significantly better than required by the 1997 PM_{2.5} NAAQS. The Baltimore, MD region's federal reference monitors have demonstrated compliance with the 65 µg/m³ daily standard since the inception of the PM_{2.5} monitoring programs within each state. The federal reference monitors have demonstrated compliance with the 15.0 µg/m³ annual standard since 2008. The most recent design value for the 24-hour standard, based on 2009-2011 data, is 29 µg/m³, and the most recent design value for the annual standard, based on 2009-2011 data, is 11.1 µg/m³.

These improvements in air quality are due to permanent and enforceable emissions reductions of sulfur dioxide (SO₂) and nitrogen oxides (NO_x), the precursors to PM_{2.5}, and also in reductions of primary PM_{2.5} emissions. This document provides a maintenance plan, as required under Section 175A of the federal Clean Air Act (CAA), to ensure that the citizens of the Baltimore, MD area enjoy the benefits of healthy air quality that complies with the 1997 PM_{2.5} NAAQS for a minimum of 10 years, through 2025. This maintenance plan supports the redesignation request that the State of Maryland is submitting to USEPA concurrently with this document.

2.1 Health Effects from Elevated Concentrations of PM_{2.5}

Health studies have shown a significant association between exposure to fine particles and premature death from heart or lung disease. Fine particles can aggravate heart and lung diseases and have been linked to effects such as: cardiovascular symptoms; cardiac arrhythmias; heart attacks; respiratory symptoms; asthma attacks; and bronchitis. These effects can result in increased hospital admissions, emergency room visits, absences from school or work, and restricted activity days.

Roughly one out of every three people in the United States is at a higher risk of experiencing PM_{2.5} related health effects. One group at high risk is active children because they often spend a lot of time playing outdoors at times when concentrations of fine particles are higher. In addition, children's bodies are still developing and they breathe more air per pound of body weight than adults do. The elderly population is often at high risk due to reduced lung capacity or preexisting medical conditions. People of all ages who are active outdoors are at increased risk because during physical activity, PM_{2.5} penetrates deeper into the parts of the lungs that are more vulnerable to injury.

2.2 Geographical Description of the Baltimore, MD PM_{2.5} Nonattainment Area

USEPA designated the Baltimore, MD area as nonattainment for the 1997 PM_{2.5} NAAQS with an effective date of April 5, 2005 (Federal Register, Vol. 70, No. 3, 1/05/2005). **Table 2-1** provides the jurisdictions within the Baltimore, MD 1997 PM_{2.5} nonattainment area, and **Figure 2-1** depicts the map of the area.

Table 2-1: Baltimore, MD Nonattainment Area with FIPS Codes

<u>County Name</u>	<u>State/County FIPS</u>
Anne Arundel County	24003
Baltimore County	24005
Carroll County	24013
Harford County	24025
Howard County	24027
Baltimore City	24510